ARIZONA DEPARTMENT
OF
ENVIRONMENTAL QUALITY

Douglas A. Ducey
Governor

Misael Cabrera
Director

Via Electronic Mail

April 3, 2018

Reading file: SWGP18-0110

City of Nogales
Stephen J. Tencza
777 N. Grand Avenue
Nogales, Arizona 85621

Re: Review of the City of Nogales AZPDES Phase II MS4 FY2017 Annual Report, Discharge Monitoring Report and Sampling and Analysis Plan

Dear Mr. Tencza:

The Arizona Department of Environmental Quality (ADEQ) received the City of Nogales's Municipal Separate Storm Sewer System (MS4), Phase II FY2017 Annual Report and Discharge Monitoring Report (DMR) on November 14, 2017 and Final Sampling and Analysis Plan (SAP) on April 2, 2018. ADEQ has completed its review and determined that no additional information is required and that Nogales is in substantial compliance with the MS4 permit requirements.

How to Submit

Please submit documents sent in response to this letter using one of the following methods:

- Hard copy to ADEQ, Attention: Rosi Sherrill, Stormwater and General Permits Unit, 1110 W. Washington Street, Phoenix, AZ 85007
- E-mail to: LS7@azdeq.gov

Thank you for your efforts to comply with Arizona's environmental requirements. Should you have any comments or questions regarding this matter, please do not hesitate to contact me at (602) 771- 4409.

Sincerely,

Rosi Sherrill

Laurie (Rosi) Sherrill, Project Manager
Stormwater and General Permits Unit

Sampling and Analysis Plan

for:

Nogales MS4

1450 N. Hohokam Dr.

Nogales, Az 85621

(520) 287-5651

SWMP Contact(s):

Stephen J. Tencza, P.E., C.F.M.
(520) 604-0731

(520) 287-6946

SAP Preparation Date: 03/30/2018

Contents

1.0 SAMPLING AND ANALYSIS PLAN

This Sampling and Analysis Plan is intended to provide all details required by the Municipal Separate Storm Sewer System (MS4), Part 6.1.3. It shall be completed, when required by activity or location, in conjunction with a Stormwater Management Program Plan (SWMP) prior to filing a Notice of Intent (NOI) via a myDEQ account.

1.1 Sampling and Analysis Plan Objectives

There are multiple objectives for this plan:

- Establish sampling protocols and methods for stormwater monitoring and sampling, as required under the MS4;
- Provide sampling locations for Nogales MS4, which are identified as Madison St., Patagonia Wash, and Parks& Recreation and are intended to monitor stormwater quality for discharges into Nogales Wash Channel and eventually, the Santa Cruz River.
- Document sampling and analysis methods and equipment for collecting representative samples of stormwater that maximize resources;

1.2 Recordkeeping Requirements

Records of monitoring information will include the results of each stormwater monitoring event (Sample Collection Form) and laboratory analyses, including all field calibration and maintenance records. All records will be documented and maintained with the SWMP in accordance with Part 7.5 of the MS4.

Monitoring data will be submitted on an electronic Discharge Monitoring Report (eDMR) via a myDEQ account by September 30th of each year. Copies of the analytical test results will be maintained with the facility records.

X☐ An Annual Report will be submitted via a myDEQ account (subject to change) on the form provided (PDF format) by ADEQ as well as maintained with the records at Nogales Public Works Building.

X☐ An Annual Report (as specified on the Nogales MS4 Notice of Intent) will be completed on the form provided (PDF format) by ADEQ and maintained with the records at Nogales Public Works Building.

1.3 Sampling Personnel

Table 1 – Sampling Personnel

Staff Names	Specific Responsibilities
Stephen J. Tencza, P.E. C.F.M.	As Nogales MS4 Stormwater Coordinator, perform all facets of the sample gathering, take to the laboratory, publish results in reports to the ADEQ.
Daniel Arizmendi,	As Nogales Pretreatment Officer and Safety Representative, assists Nogales MS4 Stormwater Coordinator with all aspects of that person's specific and general responsibilities.

1.4 Sampling Requirements

Check each type of monitoring required or exceptions taken based on industrial sector, activity, receiving water(s), or additional monitoring for ADEQ:

☐ Receiving water(s) of one or more outfalls are ephemeral and have reduced monitoring requirements

☐ One or more outfall(s) are claimed as being Substantially Similar in nature (documented in SWMP)

☐ Facility is/has been maintained as Inactive/Unstaffed (documented in SWMP)

☐ Benchmark (BM) Monitoring (non-mining)

☐ General Analytical Monitoring (mining)

☐ Effluent Limitation Guidelines (ELG)

X☐ Impaired Waters Monitoring without a TMDL

☐ Impaired Waters Monitoring with a TMDL

☐ Additional Monitoring Required by ADEQ (maintain official correspondence with SWMP)

Description of Outfall(s)

X☐ A copy of the approved myDEQ Notice of Intent (NOI) Certificate has been included which incorporates by reference the specific monitoring requirements determined by industrial sector (Benchmark or General Analytical), activity (ELG), receiving water(s) (Impaired/TMDL), and additional monitoring required by ADEQ. The attached NOI certificate serves as a summary of monitoring requirements at each outfall (Table 2).

Madison Street Outfall is a grassy swale that terminates at a four foot by six foot (4' X 6') storm drain having two twenty four inch (24") culverts that connect into a street storm drain at Madison Street and Morley Avenue. From this storm drain a thirty inch (30") concrete pipe crosses Morley Avenue and outfalls about ten feet (10') up from the bottom of the Nogales Wash Channel. The watershed is comprised of about 130 acres of rocky grassy hills.

Patagonia Wash outfall is a combination of open natural drainage from a 647 acre watershed that is grassy with rock underlying it, leading to an eight hundred foot (800') concrete lined channel that terminates with one other concrete channel into the Nogales Wash lined concrete channel.

Parks and Recreation outfall is comprised of three (3) forty eight inch (48") diameter corrugated steel culverts that discharge directly to the unlined Nogales Wash. These culverts were installed at a skew to Hohokam Drive and terminate in a steel reinforced concrete headwall that accepts drainage from a manufactured, unlined, drainageway. This drainageway traverses through the fleet maintenance yards of the departments for Public Works and Parks & Recreation, then ends in undeveloped hilly, rocky land upstream of the fleet maintenance yards. About 282 acres comprise the watershed.

Table 2 – Summary of Outfalls

Outfall Name	Parameter	Permit Value, SWQS, TMDL/ WLA	Frequency
Madison Street	Copper, ammonia, e-coli, and chlorine residual	22qg/L, varies on pH and temperature, 235 CFU/100ml, 11qg/L	Twice during monsoon rain events.
Patagonia Wash	Copper, ammonia, e-coli, and chlorine residual	22qg/L, varies on pH and temperature, 235 CFU/100ml, 11qg/L	Twice during monsoon rain events.

Parks and Recreation	Copper, ammonia, e-coli, and chlorine residual	22qg/L, varies on pH and temperature, 235 CFU/100ml, 11qg/L	Twice during monsoon rain events.

1.5 Analytical Methods and Laboratories

Other than parameters required to be sampled at the time of sample collection (e.g. field parameters), ***all samples will be analyzed by a laboratory that is licensed by the Arizona Department of Health Service (ADHS) Office of Laboratory Licensure and Certification.*** Identification of the analytical methods and related limits of detection (if applicable) for each parameter is required. ***The samples shall be analyzed using analytical methods with a limit of quantitation (LOQ) that is at or below the benchmark concentrations, ELGs or other criteria specified in this permit.*** If all methods have LOQs higher than the specific criteria, the samples shall be analyzed using the analytical method with the lowest LOQ.

All laboratory analyses will be conducted according to test procedures specified in 40 CFR 136, unless other test procedures have been specified in this general permit.

Table 4 - Laboratory Information

Turner Laboratories, Inc.	**POC:** Kevin Brim
(520) 882-5880	kbrim@turnerlabs.com
2445 North Coyote Drive, Ste. 104	
Tucson, Az. 85745	

1.6 Sampling Procedures

Event Planning and Preparation

Before leaving the Public Works Building, review preparations checklist for required minimum number of sampling bottles, uncontaminated ice cubes or shavings in the ice chest or portable cooler, partially completed Chains of Custody inserted into waterproof transparent envelopes, marking pens, blue ink ballpoint pens, safety gear and personal protection equipment (PPE) communications equipment (cell phones, two-way radios), condition of vehicle to be used, and portable test kits / hand held analyzers.

Depending on site conditions, fill sample bottle to correct indicated point on the bottle, either by direct contact with the stream or using a ten foot (10') pole with attached clean dipper/scoop. Using waterproof marking pens, label sample bottles with date, time and location. Use a portable test kit for chlorine residuals. After all samples have been obtained, complete a Chain of Custody for each sampling site and transport them to Turner Laboratories in Tucson during business hours. Have the lab sign acceptance of samples, complete the Chains of Custody, and take back the originals, allowing the lab to retain copies.

Some required sampling materials include:

☐ Sample Collection Form(s) for each outfalls

X☐ Cooler(s)

X☐ Chain-of-Custody (COC) forms and seals

X☐ Portable testing equipment

X☐ Sample containers for each outfall

☐ A temperature blank for each cooler

X☐ Field preservation supplies (ice, lab-supplied chemicals).

☐

Access

Access to the stormwater sampling location(s) is accessible by carefully walking, using rubber boots, to the outfall or obtaining a sample using a pole and dipper.

Calibration and Maintenance of Monitoring Equipment and Instrumentation

All monitoring instruments and equipment (including the field instruments for measuring pH and turbidity) shall be calibrated and maintained in accordance with the manufacturer's recommendations. Calibration procedures are per detailed instructions provided by the instrument's manufacturer.

Calibration of the instruments will occur twenty four (24) hours prior to sampling.

The preferred manufacturer and instrument for the collection of field parameter pH is:

- Thermo Scientific Orion Star A121 Portable pH meter

Monitoring Equipment and Instrumentation

List equipment and instrumentation and describe the procedures for collecting data from them.

- HACH test kit Pocket Colorimeter II Follow HACH's written instructions
- YSI 550A Dissolved Oxygen Instrument Follow the Operations Manual

Sample Collection and Handling Procedures

All required monitoring will be performed on a storm event that results in a discharge from the outfall ("measurable storm event") and collected within the first 30 minutes of the first flush runoff flow. This storm event must follow the preceding measurable storm event by at least 72 hours (3 calendar days). The 72-hour (3 day) storm interval will not apply if the Nogales MS4 Stormwater Coordinator is able to document that less than a 72-hour interval is representative for local storm events during the sampling period.

Any missed monitoring events will be documented in the SWMP by emails and memorandum format.

Field Documentation

The following information will be recorded in a field notebook, on a sampling form (template Sample Collection form included, one form for each outfall's sampling event), during collection of samples:

- Names of personnel participating in event
- Description of weather conditions
- Estimated duration (in hours) of the rainfall event
- Estimated rainfall total (in inches) for that rainfall event and source
- Date of the previous measurable storm event
- Field instrument calibration information
- Sample location and description (outfall or other)
- Date and time of sample collection
- Type of sample (grab, discrete, manual, auto sampler)
- Observations of sampling procedures and conditions at the time of sampling
- Field observations and description of problems encountered or changes made from the plan
- Sample identification name

- Field parameter measurements (see partial list below)
- Estimated rainfall/storm duration
- (optional) Stream flow
- Field filtration methods used
- Field observations relevant to sample integrity
- Rainfall measurement in inches
- QC samples and sample names if taken for the event

The following field parameter will be measured and recorded at the time of sample collection: pH

Event First Flush

The MS4 requires collecting a minimum of one grab sample from a discharge resulting from a measurable storm event that produces a sufficient volume to allow collection of a sample. Samples must be collected within the first 30 minutes of a measurable storm event. If it is not possible to collect within the first 30 minutes of a measurable storm event, the sample must be collected as soon as practicable after the first 30 minutes and within 24 hours of the measurable storm event. If the sample could not be collected within the first 30 minutes, include an explanation why it was not possible in the SWMP.

Sample Container Labeling

Each sample will be assigned a unique identifier by the sampling team. The unique identifier may consist of the sample location name (e.g. Outfall #1 or Outfall #2) followed by a date suffix such as YYMMDD. The unique identifier will be recorded on the COC form and the sample container. :Madison Street, Patagonia Wash, and Parks & Recreation are the three unique identifiers..

Each container in the sample must be labeled with the unique identifier as well as the following minimum information:

- Sampler initials
- Sample collection date
- Sample collection time

The laboratory will provide labels to be placed on each of the sample containers. The laboratory ***may*** affix the labels in advance. **Self-adhesive labels will be secured to each sample container. *Samples will be immediately placed on ice for transport to Turner Laboratories in Tucson.***

Sample Container Preservation

Procedures necessary to properly preserve samples will be provided by the laboratory contracted to perform sample analysis. Because the lab is only one hour away, the samples will be immediately iced. The sample bottles provided by the lab also have powered preservative in each.

NOTE: *There are techniques that can be used if a longer hold time is necessary than the 24 hours unpreserved samples permit. An option would be to acquire laboratory-supplied bottles with preservatives to use in the field. For total metals, samples can be placed directly in sample bottles with preservatives (HNO_3) and hold time is increased to 6 months. Dissolved metals must be field filtered before being placed in bottles containing preservatives in order to increase hold time to 6 months. Extending hold times can be helpful when you cannot deliver the samples to the laboratory within 24 hours. In addition to preservatives, samples are placed on ice and maintained at a temperature of four degrees Celsius.*

Sample Preparation and Transport

Specific procedures and instruction for proper sample cooler packing and transport are critical in maintaining sample integrity. The following section contains guidelines for sample packaging and transport.

The following procedures will be used when preparing the sample cooler(s) for shipment or delivery to the laboratory:

- All labels remaining on the exterior of the cooler will be removed
- A temperature blank will be placed in the cooler (if
- Sample bottles will be packaged per manufacturer and lab instructions to prevent breakage during shipment;
- All ice will be bagged in zip-locked plastic bags (confirm

provided or available) with specific lab)

When placing the samples in the cooler, ensure that the COC form is in a sealed watertight bag taped to the inside of the lid. Sample coolers will be transported to the certified laboratory, Turner Laboratories, Inc., by one from the sampling team.

Relinquishment

The assigned Stormwater Team Member will sign over the COC form to the receiving entity, Turner Laboratories, and the COC form will be signed and dated with the time of relinquishment.

Once the cooler(s) is/are delivered to the laboratory, the cooler's contents will be checked against information on the COC form. The condition, temperature, and appropriate preservation of samples will be checked and documented on the COC form by the lab. Any discrepancies between the COC and the sample conditions at the time of delivery to the laboratory will be communicated to the Stormwater Team Manager for proper resolution and documented in laboratory records.

Receipt and Review of Lab Results

The lab's results reports will generally be delivered to the Nogales MS4 Stormwater Coordinator, who will disseminate them after evaluating the reports' results. Following evaluation of the results report, the Nogales MS4 Stormwater Coordinator will refer to the SWMP for the appropriate response or follow-up with a different action.

ADEQ Arizona Department of Environmental Quality

Stormwater MS4 Sample Collection Form

(Complete a separate form for each outfall sampled)

Facility Sample Information			
Facility Name: Nogales MS4		AZPDES Auth. No.	AZG2016-002, LTF #65849
Outfall Name: Madison Street	"Substantially Similar Discharge Point"?	X☐ Yes ☐ No	
Person(s)/Title(s) collecting sample: Stephen J. Tencza, Nogales MS4 Stormwater Coordinator			
Person(s)/Title(s) assisting with sample: Daniel Arizmendi, Nogales Pretreatment Officer			
Date & Time Discharge Began:	Date & Time Sample Collected:	If sample not taken within first 30 minutes, explain why:	
Unique Sample Identifier (Matches Identifier on COC)	Madison Street Outfall, Patagonia Wash, or Parks & Recreation		
Substitute Sample?	☐ No ☐ Yes (identify quarter/year when sample was originally scheduled to be collected):		
Nature of Discharge: X☐ Rainfall ☐ Snowmelt			
Rainfall Amount: _____"	Previous Storm Ended > 72 hours Before Start of This Storm?	☐ Yes ☐ No* (explain):	

Field Sampling Data					
Type of Sample	X☐ Grab ☐ Discrete ☐ Manual ☐ Auto sampler				
Field Parameter Measurements	pH:	Temperature:	Flow rate:	Chlorine residual:	
Field Filtration Methods	Not applicable				
QC Samples					
Field Instrument Calibration Data					
Indicators of Stormwater Pollution Observed?	☐ No X☐ Yes (Describe):				

Observations of sampling procedures and conditions at the time of sampling:

* The 72-hour interval can be waived when the previous storm did not yield a measurable discharge or if you are able to document (attach applicable documentation) that less than a 72-hour interval is representative of local storm events during the sampling period.

Description of problems encountered or deviations made from the Plan:

Certification Statement (Refer to MS4 Appendix B, Paragraph 9, for Signatory Requirements)

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

A. Name:	Stephen J. Tencza, P.E.,C.F.M.	B. Title:	Nogales MS4 Stormwater Coordinator
C. Signature:	Stephen J. Tencza	D. Date Signed:	April 02, 2018